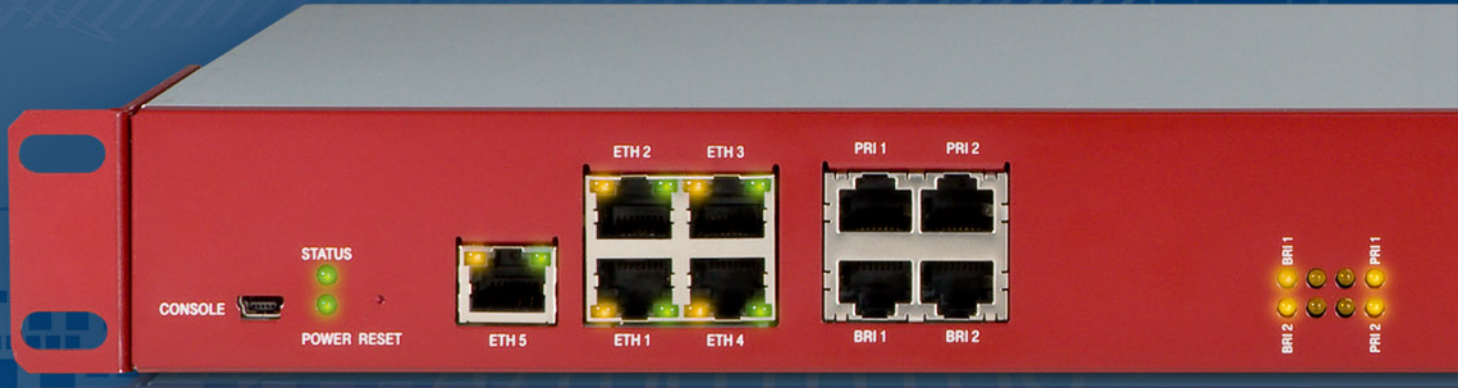
funkwerk
enterprise communications

VPN GATEWAY

The VPN gateway with PRI interface

bintec R4402

- ISDN - 2 * PRI and 2 * BRI
- 5 x Gigabit Ethernet
- 19'' housing with integrated power supply
- Web-based configuration / wizards
- IPSec - 10 tunnels, opt. up to 110, HW acceleration
- Stateful Inspection Firewall



Professional VPN gateway with S2M backup

R4402

The bintec R4402 is a powerful and, thanks to its comprehensive equipment, flexible VPN gateway. With its 19-inch metal housing and highly efficient internal switched-mode power supply the gateway guarantees long-term reliability in critical corporate applications. This makes the R4402 ideal for use as a VPN gateway in SMEs and company head offices. The device has five Gigabit Ethernet ports, which can be configured for LAN, WAN or DMZ, and comes with a licence for ten hardware-accelerated IPSec tunnels. Up to 100 additional IPSec tunnels can also be enabled if licensed. The device comes with two ISDN BRI-S0 and two ISDN PRI-S2M interfaces. In total is provides 68 ISDN-B channels for different ISDN applications such as ISDN backup, ISDN remote access server or ISDN leased lines.

Using functions flexibly

Only a few functions are required to forward data between two networks. Bintec gateways have features that go far beyond just routing and allow it to be seamlessly integrated into complex IT infrastructures.
As routing protocols, you can use RIP, OSPF or the Multicast routing protocol PIM-SM for example, and the comprehensive multicast support makes the device ideal for use in multimedia and streaming applications.
Even the basic equipment of the bintec R4402 provides a SIP application level gateway (ALG) for the direct connection of IP telephones in the network or for registering with a VoIP provider. The ALG automatically controls the internal firewall making it easier to configure your VoIP solution.
Thanks to the integrated quality of service, you can prioritise VoIP traffic over normal internet traffic, for example, and thereby always ensure sufficient bandwidth for your IP voice connections. Alternatively you can give normal data traffic priority over e-mail traffic.
The DNS proxy function supports the LAN for address implementation and the automated IP configuration of PCs is carried out over an integrated DHCP server.
Remote CAPI is available for the joint use of various ISDN services.

Comprehensive IPSec implementation

The IPSec implementation integrated in bintec R4402 works not only with preshared keys but also with certificates. This allows a public key infrastructure to be created for maximum security. (The Federal Office for Information Security also recommends the use of certificates.)
Furthermore, the bintec IPSec implementation offers support when creating VPN connections with dynamic IP addresses: Even small branch offices can be reached without having to be permanently online. If both VPN nodes only have dynamic IP addresses, confidential information can continue. The exchange of IP addresses is carried out either over dynamic DNS providers or directly over an ISDN connection. The actual dynamic IP address is transferred either free of charge in the ISDN D-channel or, if this is not possible, in the B-channel (at cost).
By using IKE Config mode and the bintec IPSec multi user this offers the opportunity to create and manage IPSec dial-in solutions for multiple clients with minimal expense and IKE X-Auth (extended authentication) allows a connection to be secured with a one time password and thus with the highest level of security.

Load Balancing/Redundancy

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Simple configuration and maintenance

The gateway is configured over the Funkwerk Configuration Interface (FCI), using the integrated configuration wizards for example. The FCI is a web-based graphic user surface that you can use from any PC with an up-to-date Web browser via an HTTP or encrypted HTTPS connection. It also offers the opportunity to manage the devices locally and remotely over other configuration accesses such as Telnet, SSH and ISDN login.

In addition the R1202 offers the option of the funkwerk WLAN Controller.
The funkwerk WLAN Controller allows the configuration and monitoring of small and medium sized WLANs with up to 24 access points.
Whether it is for frequency management which automatically determines the radio channels, for the support of virtual LANs or for the management of virtual radio networks (Multi SSID)—the WLAN Controller offers easy control over all advanced features. Our software continuously monitors the entire wireless LAN and immediately reports outages and security risks.DIME Manager from Funkwerk Enterprise Communications (FEC) is a free tool for managing FEC devices.

DIME Manager is aimed at administrators who manage networks with up to 50 devices. The software simplifies the management and configuration of gateways or access points either individually or in logical groups.
When developing DIME Manager, simple and efficient operation was the primary aim. It allows, for example, software updates to be applied to individual devices or groups of devices simply by drag and drop. DIME Manager recognises and manages new devices in the network using SNMP multicast, in other words independent of their current IP address.

ISDN Interface

Feature	Description
CAPI	CAPI 2.0 with CAPI user concept (password for CAPI use)
ISDN leased lines	Supported leased lines: ISDN BRI: D64S, D64S2, TS02, D64S2Y; ISDN PRI: D2M, LMS64
ISDN auto-configuration	Automatic recognition and configuration of ISDN protocols
B channel protocols	Excellent interoperability with other manufacturers (Raw HDLC, CISCO HDLC, X.75)
X.31 over CAPI	Support for various connection paths: X.31/A for ISDN D-channel, X.31/A+B for ISDN B-channel, X.25 within ISDN B-channel (also leased lines)
Bit rate adaption	V.110 (1,200 up to 38,400 bps), V.120 up to 57,600 kbps (HSCSD) for connection to GSM subscribers

Security

Feature	Description
NAT/PAT	Symmetric Network and Port Address Translation (NAT/PAT) with randomly generated ports inclusive Multi NAT (1:1 translation of whole networks)
Policy based NAT/PAT	Network and Port Address Translation via different criteria like IP protocols, source/destination IP Address, source/destination port
Policy based NAT/PAT	For incoming and outgoing connections and for each interface variable configurable
Content Filtering	Optional ISS/Cobion Content filter (30 day test license inclusive)
Stateful Inspection Firewall	Packet filtering depending on the direction with controling and interpretation of each single connection status
Packet Filter	Filtering of IP packets according to different criteria like IP protocols, source/destination IP address, source/destination port, TOS/DSCP, layer 2 priority for each interface variable configurable

Routing

Feature	Description
Policy based Routing	Extended routing (Policy Based Routing) depending of diffent criteria like IP protocols (Layer4), source/destination IP address, source/destination port, TOS/DSCP, source/destination interface and destination interface status
Multicast IGMP	Support of Internet Group Management Protocol (IGMP v1, v2, v3) for the simultaneous distribution of IP packets to several stations
Multicast IGMP Proxy	For easy forwarding of multicast packets via dedicated interfaces
Multicast Routing Protocol PIM SM	Protocol Independent Multicast (PIM) distributes information via a central Rendezvous Point Server. PIM Modus Sparse Mode (SM) forwards only packets to groups which have been requested
Multicast inside IPSec tunnel	Enables the transmission of multicast packets via an IPSec tunnel
RIP	Support of RIPv1 and RIPv2, separated configurable for each interface
Extended RIP	Triggerd RIP updates according RFC 2091 and 2453, Poisened Rerverse for a better distribution of the routes; furthermore the possibility to define RIP filters for each interface.
OSPF	Support of the dynamic routing protocol OSPF
BGP4	On request
Routing throughput (1518)	199 Mbps with 1518 Byte packets
Routing throughput (256)	198 Mbps with 256 Byte packets

VPN

Feature	Description
PPTP (PAC/PNS)	Point to Point Tunneling Protocol for establishing fo Virtual Privat Networks, inclusive strong encryption methods with 128 Bit (MPPE) up to 168 Bit (DES/3DES, Blowfish)
PPP / PPTP hardware acceleration	Integrated hardware acceleration for PPP/PTPP encryption algorithms DES, 3DES, MPPE
GRE v.0	Generic Routing Encapsulation V.0 according RFC 2784 for common encapsulation
L2TP	Layer 2 tunnelling protocol inclusive PPP user authentication
Number of VPN tunnels	Inclusive 110 active PPTP, L2TP and GRE v.0 tunnels (also in combination possible)
IPSec	Internet Protocol Security establishing of VPN connections
Number of VPN tunnels	Inclusive 10 active VPN tunnels, optional up to 110 IPSec tunnels
IPSec Algorithms	DES (64 Bit), 3DES (192 Bit), AES (128,192,256 Bit), CAST (128 Bit), Blowfish (128-448 Bit), Twofish (256 Bit); MD-5, SHA-1, RipeMD160, Tiger192 Hashes
IPSec hardware acceleration	Integrated hardware acceleration for IPSec encryption algorithms DES, 3DES, AES inclusive hardware acceleration for MD-5, SHA-1 Hash generation
IPSec IKE	IPSec key exchange via preshared keys or certificates
IPSec IKE Config Mode	IKE Config Mode server enables dynamic assignment of IP addresses from the address pool of the company. IKE Config Mode client enables the router, to get assigned dynamically an IP address.
IPSec IKE XAUTH (Client/Server)	Internet Key Exchange protocol Extended Authenticaion client for login to XAUTH server and XAUTH server for loging of XAUTH clients
IPSec IKE XAUTH (Client/Server)	Inclusive the forwarding to a RADIUS-OTP (One Time Password) server (supported OTP solutions see www.funkwerk-ec.com).
IPSec NAT-T	Support of NAT-Traversal (Nat-T) for the application at VPN lines with NAT
IPSec IPComp	IPSec IPComp data compression for higher data throughput via LZS
IPSec certificates (PKI)	Support of X.509 multi-level certificates compatible to Micrososft and Open SSL CA server; upload of PKCS#7/8/10/12 files via TFTP, HTTP, HTTP, LDAP, file upload and manual via FCI
IPSec SCEP	Certificates management via SCEP (Simple Certificate Enrollment Protocol)
IPSec Certificate Revocation Lists	Support of remote CRLs on a server via LDAP or local CRLs
IPSec Dead Peer Detection (DPD)	Continuous control of IPSec connection
IPSec dynamic IP via ISDN	Transmission of dynamic IP address in ISDN D or B channel; free-of-charge licence necessary
IPSec dynamic DNS	Enables the registering of dynamic IP addresses by a dynamic DNS provider for establishing a IPSec connection.
IPSec RADIUS	Authentication of IPSec connections at a RADIUS server. Additionally the IPSec peers, which were configured on a RADIUS server, can be loaded into the gateway (RADIUS dialout).
IPSec Multi User	Enables the Dial-in of several IPSec clients via a single IPSec peer configuration entry
IPSec QoS	The possibility to operate Quality of Service (traffic shaping) inside of an IPSec tunnel
IPSec NAT	By activating of NAT on an IPSec connection it is possible, to implement several remote locations with identical local IP addess networks in different IP nets for the VPN connection
IPSec throughput (1400)	86 Mbps with 1400 Byte packets with AES 256 / AES 128 / 3 DES encryption
IPSec throughput (256)	19 Mbps with 1400 Byte packets with AES 256 / AES 128 / 3 DES encryption

Protocols / Encapsulations

Feature	Description
PPP/MLPPP	Support of Point to Point Protocol (PPP) for establishing of standard PPP connections, inclusive the Multilink extension MLPPP for the bundeling of several connections
PPPoE (Server/Client)	Point-to-Point Protocol over Ethernet (Client and Server) for establisching of PPP connections via Ethernet/DSL (RFC 2516)
MLPPPoE (Server/Client)	Multilink extension MLPPPoE for bundeling several PPPoE connections (only if both sides support MLPPPoE)
DNS	DNS client, DNS server, DNS relay and DNS proxy
DYN DNS	Enables the registering of dynamic assigned IP addresses at adynamic DNS provider, e.g. for establishing of VPN connections
DNS Forwarding	Enables the forwarding of DNS requests of free configurable domains to assigned DNS server.
DHCP	DHCP Client, Server, Proxy and Relay for siplified TCP/IP configuration
Packet size controling	Adaption of PMTU or automatic packet size controling via fragmentation
X.25 Enhanced	Optional: X.25 over ISDN, XOT, X.25 to TCP Gateway, X.25 PAD, TP0 Bridge

QoS

Feature	Description
Policy based Traffic Shapping	Dynamic bandwidth management via IP traffic shaping
Bandwidth reservation	Dynamic reservation of bandwidth, allocation of guaranteed and maximum bandwidths
DiffServ	Priority Queuing of packets on the basis of the DiffServ/TOS field
Layer2/3 tagging	Conversion of 802.1p layer 2 priorisation information to layer 3 diffserv attributes
TCP Download Rate Control	For reservation of bandwidth for VoIP connections

Redundancy / Loadbalancing

Feature	Description
BRRP	Bintec Router Redundancy Protocol for backup of several passive or active devices with free selectable priority
BoD	Bandwidth on Demand: dynamic bandwidth to suit data traffic load
Load Balancing	Static and dynamic load balancing to several WAN connections on IP layer
VPN backup	Simple VPN backup via different media. Additional enables the Funkwerk interface based VPN concept the application of routing protocols for VPN connections.

Layer 2 Functionality

Feature	Description
Bridging	Support of layer 2 bridging with the possibility of separation of network segment via the configuration of bridge groups
VLAN	Support of up to 32 VLAN (Virtual LAN) for segmentation of the network in independent virtual segments (workgroups)
Proxy ARP	Enables the router to answer ARP requests for hosts, which are accessible via the router. That enables the remote clients to use an IP address from the local net.

Logging / Monitoring / Reporting

Feature	Description
Internal system logging	Syslog storage in RAM, display via web-based configuration user interface (http/https), filter for subsystem, level, message
External system logging	Syslog, several syslog server with different syslog level configurable
E-Mail alert	Automatic E-Mail alert by definable events
SNMP traps	SNMP traps (v1, v2, v3) configurable
Activity Monitor	Sending of information to a PC on which Brickware is installed
IPSec monitoring	Display of IPSec tunnel and IPSec statistic; output via web-based configuration user interface (http/https)
Interfaces monitoring	Statistic information of all pysical and logical interfaces (ETH0, ETH1, SSIDx, ...), output via web-based configuration user interface (http/https)
ISDN monitoring	Display of active and past ISDN connections; output via web-based configuration user interface (http/https)
IP accounting	Detailed IP accounting, source, destination, port, interface and packet/bytes counter, transmission also via syslog protocol to syslog server
ISDN accounting	Detailed ongoing recording of ISDN connection parameter like calling number and charging information, transmission also via syslog protocol to syslog server
RADIUS accounting	RADIUS accounting for PPP, PPTP, PPPoE and ISDN dialup connections
Keep Alive Monitoring	Control of hosts/connections via ICMP polling
Tracing	Detailed traces can be done for different protocols e.g. ISDN, PPPoE, ... generation local on the device and remote via DIME manager
Tracing	Traces can be stored in PCAP format, so that import to different open source trace tools (e.g. wireshark) is possible.

Administration / Management

Feature	Description
RADIUS	Central check of access authorization at one or several RADIUS server, RADIUS (PPP, IPSec inclusive X-Auth and login authentication)
RADIUS dialout	On a RADIUS server configured PPP und IPSec connection can be loaded into the gateway (RADIUS dialout).
TACACS+	Support of TACACS+ server for login authentication and for shell comando authorization
Time synchronization	The device system time can be obtained via ISDN and from a SNTP server (up to 3 time server configurable). The obtained time can also be transmitted per SNTP to SNTP clients.
Automatic Time Settings	Time zone profiles are configurable. That enables an automatic change from summer to winter time.
Supported management systems	DIME Manager, XAdmin
Configurable scheduler	Configuring of time and event controlled tasks, e.g. reboot device, activate/deactivate interface, activate/deactivate WLAN, trigger SW update and configuration backup
Funkwerk Configuration Interface (FCI)	Integrated web server for web-based configuration via HTTP or HTTPS (supporting self created certificates). This user interface is by most of Funkwerk EC products identical.
Software update	Software updates are free of charge; update via local files, HTTP, TFTP or via direct access to the FEC web server
Remote maintenance	Remote maintenance via telnet, SSL, SSH, HTTP, HTTPS and SNMP (V1,V2,V3)
Configuration via serial interface	Serial configuariton interface is available
ISDN remote maintenance	Remote maintenance via ISDN dial-in with checking of the calling number. The ISDN remote maintenance connection between two funkwerk devices can be encrypted.
ISDN remote maintenance	A transparent mode enables transmissions of configurations and software updates respectively
GSM remote maintenance	Remote maintenance via GSM login (external modem and cable required)
Device discovery function	Device discovery via SNMP multicast.
On The Fly configuration	No reboot after reconfiguration required
SNMP	SNMP (v1, v2, v3), USM model, VACM views, SNMP traps (v1, v2, v3) configurable, SNMP IP access list configurable
SNMP configuration	Complete management with MIB-II, MIB 802.11, Enterprise MIB
Configuration export and import	Load and save configurations, optional encrypted; optional automatic control via scheduler
SSH login	Supports SSH V1.5 and SSH V2.0 for secure connections of terminal applications
HP OpenView	Integration into Network Node Manager
XAdmin	Support of XAdmin roll out and configuration managemant tool for larger router installations (IP+ISDN+GSM)

Interfaces

Feature	Description
Ethernet	5 x 10/100/1000 Mbps Ethernet Twisted Pair, autosensing, Auto MDI/MDI-X, up to 4 ports can be switches as additional WAN ports incl. load balancing, all Ethernet ports can be configured as LAN or WAN.
Serial console	Serial console interface / COM port (mini USB): optional, connection of an analogue / GPRS modem is possible (supported modems: see www.funkwerk-ec.com)
ISDN Basic Rate (BRI)	2 x BRI (NT/TE), each 2 B channel
ISDN Primary Rate (PRI)	2 x PRI (NT/TE), each 30 B channel

Hardware Features

Feature	Description
19 inch	Mountable in 19 inch rack, incl. 19 inch rack mount kit
Realtime clock	System time persists even at power failure for some hours.
Environment	Temperature range: Operational 0°C to 40°C; storage -10°C to 70°C; Max. rel. humidity 10 - 95% (non condensing)
Power supply	Integrated wide range power supply 110-240V, with energy efficient swiching controller
Power consumption	Max. 24 Watt, typ. 15 Watt
housing	19 inch 1 high unit metal case, screw-on 19 inch mounting-angle, LEDs and network connectors at front side
Dimension	Ca. 485.6 mm x 220 mm x 45 mm (W x H x D)
Weight	Ca. 2600g
Fan	Fanless design therefor high MTBF
Reset button	Restart or reset to factory state possible
Standards and certifications	R&TTE directive 1999/5/EG; EN 55022; EN 55024 + EN 55024/A1; EN61000-3-2; EN 61000-3-3; EN 61000-4-4; EN 60950-1; EN 300 328

Content of Delivery

Feature	Description
Manual	Quick Installation Guide in German and English
DVD	DVD with system software, management software and documentation
Ethernet cable	1 Ethernet cable, 3m
Network cable	Power cable
Serial cable	Serial cable (mini USB - DSUB 9 female)
ISDN (BRI/S0) cable	ISDN (BRI/S0) cable, 3m
ISDN (PRI/S2M) cable	ISDN (PRI/S2M) cable, 3m

Service

Feature	Description
Warranty	2 year manufacturer warranty inclusive advanced replacement
Software Update	Free-of-charge software updates for system software (BOSS) and management software (DIME manager)

Article number

Feature	Description
bintec R4402; art. no. 5510000214	VPN Gateway; 19 inch rack; ISDN 2xBRI 2xPRI; incl. 10 IPSec tunnels (opt. max. 110), certificates, HW encryption; 4+1 Gigabit Eth. switch; german and intern. version.
bintec R4402 - UK; art. no. 5510000264	VPN Gateway; 19 inch rack; ISDN 2xBRI 2xPRI; incl. 10 IPSec tunnels (opt. max. 110), certificates, HW encryption; 4+1 Gigabit Eth. switch; UK version.

Options

Feature	Description
Rxxx2-License WLAN Contr. 6AP	Rxxx2 license WLAN Controller for 6 AP; art.no. 5500000943
ISDN PRI/S2M cable	cable for ISDN PRI/S2M connection; art. no. 01466
VPN-IPSec-25	License for 25 additional activ IPSec tunnels; art. no. 5500000781
X.25	License for X.25 feature set; art. no. 5500000783
HotSpotHosting	Art.no. 5510000198 - HotSpot solution hosting fee for 1 year and 1 location; art.no. 5500000861 - HotSpot solution hosting fee for 2 year and 1 location; art.no. 5510000199 - Additional location for HotSpot solution
Cobion Content Filter Small	License for one year Cobion content filter (small); art. no. 80551
MPPC and Stac compression	Free-of-charge license for Stac and MPPC compression; registration under www.funkwerk-ec.com required
IP address ISDN B/D channel license	Free of charge license for IP address transmission in ISDN D or B channel for IPSec connections; registering under www.funkwerk-ec.com required.
Service package 'large' (art.no. 5500000811)	Warranty extension of 3 years to a total of 5 years, including advanced replacement for FEC products of the category "large". (Please find a) detailed description as well as an overview of the categories on www.funkwerk-ec.com/servicepackages.